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PATENT APPLICATION

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UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Reuter, James, et al.

Confirmation No.: 3048

Application No.: 09/872,970

Examiner: Chankong, Dohm

Filing Date: 06/01/2001

Group Art Unit: 2152

Title: Architecture for Parallel Distributed Table Driven I/O Mapping

Mail Stop Appeal Brief - Patents  
Commissioner For Patents  
PO Box 1460  
Alexandria, VA 22313-1460TRANSMITTAL OF REPLY BRIEFTransmitted herewith is the Reply Brief with respect to the Examiner's Answer mailed on March 8, 2006.

This Reply Brief is being filed pursuant to 37 CFR 1.193(b) within two months of the date of the Examiner's Answer.

(Note: Extensions of time are not allowed under 37 CFR 1.136(a))

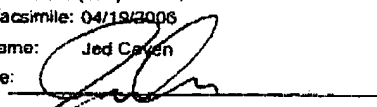
(Note: Failure to file a Reply Brief will result in dismissal of the Appeal as to the claims made subject to an expressly stated new ground rejection.)

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: )  
 )  
Reuter, James, et al. ) Group Art Unit: 2152  
 )  
Serial No.: 09/872,970 ) Examiner: Chankong, Dohm  
 )  
Filing Date: 06/01/2001 ) Confirmation No.: 3048  
 )  
For: Architecture for Parallel Distributed Table Driven I/O Mapping

**REPLY BRIEF**

To: Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Commissioner:

This Reply Brief is submitted in response to the Examiner's Answer mailed March 8, 2006.

**STATUS OF CLAIMS**

Claims 1-30, 34, and 36-40 are rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 6,260,162 to Blumenau ("Blumenau") in view of U.S. Patent No. 5,404,351 to Casorso ("Casorso").

**GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

Whether claims 1-30, 34, and 36-40 are obvious under 35 U.S.C. §103(a) over Blumenau, alone or in combination with Casorso.

## ARGUMENT

### I. Rejections Under 35 U.S.C. §103

Claims 1-30, 34, and 36-40 were rejected under 35 U.S.C. §103(a) as being unpatentable over Blumenau in view of Casorso. These rejections are traversed based on the arguments presented in the Appeal Brief filed December 19, 2005 and the following arguments responsive to the assertions in the Examiner's Answer mailed March 8, 2006.

#### A. Claim 1

Applicant maintains the position that Blumenau cannot render obvious claim 1 because Blumenau fails to disclose or suggest limitations recited in claim 1.

##### 1. Blumenau Fails to Disclose or Suggest a Controller Having Non-Volatile Memory for Storing A Second Copy of the Table

Independent claim 1 includes limitations directed to "a controller coupled to the agent, the controller having non-volatile memory for storing a second copy of the table . . . ." The Examiner's Answer maintains that Blumenau discloses this limitation, and asserts that Blumenau's storage volume 26 (See, Blumenau, Fig. 1) corresponds to a controller as recited in the claim. The Examiner's Answer provides *no factual basis whatsoever in Blumenau* to support this assertion.

Applicant disagrees. The storage volume 26 is described in Blumenau at column 8, lines 28-35, which text reads as follows:

The storage volumes are logical units of storage distributed over one more storage devices 28, 29, 30, and 31. The storage devices are magnetic disk drives, optical disk drives, tape drives, solid-state memory devices, or other storage devices capable of providing nonvolatile data storage. Presently the preferred storage devices are magnetic disk drives each having a storage capacity of at least 46 gigabytes.

Nothing in this text discloses or suggests that the storage volumes 26 in Blumenau

constitute a controller coupled to the agent, the controller having non-volatile memory for storing a second copy of the table, as recited in claim 1. To the contrary, Blumenau discloses that the storage volumes 26 are logical units distributed over one or more storage devices. In short, a logical storage unit is not a controller. Thus, there is no evidence in the record to establish that Blumenau discloses or suggests *a controller coupled to the agent, the controller having non-volatile memory for storing a second copy of the table*, as recited in claim 1.

2. *Blumenau Fails to Disclose or Suggest that the Controller Having Non-Volatile Memory For Storing A Second Copy of the Table Intermittently Causes Contents of the First Table to be Replaced by Contents of the Second Table*

Independent claim 1 further recites that “the controller intermittently causing contents of the first copy of the table to be replaced by contents of the second copy of the table.” As noted in the Appeal Brief, the first Action asserted that Blumenau disclosed this limitation and cited Figs. 4-5 and col. 14, lines 27-31 and col. 25 lines 1-7 to support the assertion. Applicant traversed the rejection. In response, the second Action asserted that Blumenau discloses this limitation, and cited Fig. 21, item 27, and col. 32, lines 43-54 to support the assertion. Applicant traversed the rejection. In response, the final Action asserted that Blumenau discloses this limitation, and cited Fig. 21, item 27, col. 14, lines 31-33, col. 21, lines 35-40, and col. 32 lines 43-54 and the doctrine of inherency to support the assertion.

The Examiner’s Answer appears to drop its reliance on the doctrine of inherency, and now cites column 21, lines 35-40 and col. 45, lines 3-4 to support the assertion that “[a] reasonable implication to one of ordinary skill in the art is that the back-up copy of the table is for restoring the primary table if the primary table has any errors.”

Applicant disagrees. The cited text reads as follows:

In step 167, the volume access table and volume lists are copied to a storage volume as back-up for port adapter error recovery or diagnostic purposes, and the routine is finished. The back-up copy should be updated if additional group names are added to the volume access table or if the volume lists are changed

10. It should be possible to back up and restore the host-to-volume connectivity configuration information.

Contrary to the assertion in the final Action, nothing in this text discloses or suggests *intermittently causing contents of the first copy of the table to be replaced by contents of the second copy of the table*, as recited in claim 1.

Moreover, the assertions in the Examiner's Answer fail to address specific structural limitations recited in the claim. Claim 1 recites that *the controller intermittently caus[es] contents of the first copy of the table to be replaced by contents of the second copy of the table*. As noted above, the Examiner's Answer asserts that the storage volumes 26 disclosed in Blumenau correspond to the controller recited in the claim. Hence, to support an obviousness rejection the Examiner's Answer needs to establish that the storage volumes 26 cause contents of the first copy of the table to be replaced by contents of the second copy of the table. There is no evidence whatsoever in the record that storage volumes 26 in Blumenau cause contents of the first copy of the table to be replaced by contents of the second copy of the table. This is not surprising, since nothing in Blumenau discloses or suggests that the storage volumes 26 correspond to a controller or otherwise have the functional capability to initiate a data transfer operation.

In sum, contrary to the assertion in the Examiner's Answer, Blumenau, alone or in combination with Casorso, neither discloses nor suggests the limitations of claim 1. Thus, Blumenau, alone or in combination with Casorso, cannot render obvious claim 1.

B. Claim 2

The Examiner's Answer appears to withdraw reliance on Blumenau, and now cites Casorso to support the rejection of claim 2. Applicant notes that reliance on Casorso constitutes a new ground of rejection applied to claim 2.

Applicant traverses the rejection of claim 2. Claim 2 includes a limitation reciting "the table entries further include an indication of whether an invalid state is activated such that the invalid state for a table entry becomes activated when that table entry contains no useable mapping information." The Examiner's Answer cites Casorso, col. 11, lines 19-24 to support the rejection, asserting that "Casorso thus discloses that each table entry (or track) may be marked as invalid when that entry is not useful so as to prevent other hosts from attempting to read from that track. This functionality reads on the limitations of claim 2."

Applicant disagrees. The cited text reads as follows:

At step 703, the control unit 101 marks the virtual track instance that is stored in the redundancy group as invalid in order to assure that the logical location at which this virtual track instance is stored is not accessed in response to another host processor 12 attempting to read or write the same virtual track.

Contrary to the assertion in the final Action, nothing in this text discloses or suggests that the table entries further include an indication of whether an invalid state is activated such that the invalid state for a table entry becomes activated when that table entry contains no useable mapping information, as recited in claim 2. To the contrary, Casorso appears to be concerned with the integrity of the data—not the mapping information.

In sum, contrary to the assertion in the Examiner's Answer, Blumenau, alone or in combination with Casorso, neither discloses nor suggests the limitations of claim 2. Thus, Blumenau, alone or in combination with Casorso, cannot render obvious claim 2.

D. Claim 12

The Examiner's Answer appears to assert that the Appeal Brief incorrectly recited limitations in Claim 12. Applicant disagrees. The Appeal Brief accurately recites the limitations of claim 12.

The final Action rejected independent claim 12 "for similar reasons as claims 1-5 and 8-11." The Examiner's Answer asserts the response applied to claim 1 against claim 12. In response Applicant asserts the arguments asserted above with respect to claim 1 apply to claim 12.

E. Claim 24

Applicant maintains the position that Blumenau, alone or in combination with Casorso, cannot render obvious claim 24.

1. *There is No Evidence of Record to Support the Assertion that Blumenau or Caroso Disclose Limitations Recited in the Claim*

Independent claim 24 is a method claim that includes a limitation directed to “specifying a block on the virtual disk within the operation.” Independent claim 24 further includes a limitation directed to “accessing a table mapping the block to a storage location on a storage device.”

The final Action appeared to assert that Figs. 23-25 of Blumenau disclose these limitations. In the Appeal Brief, Applicant traversed the rejection, noting that a close inspection of Blumenau reveals that Figs. 23-25 are simply examples of mapping tables, which, being structural elements, could not disclose or suggest the operations recited as limitations in a method claim.

The Examiner's Answer appears to drop its reliance on Figs. 23-25 of Blumenau, and now asserts new grounds of rejection. The Examiner's Answer now cites Fig. 25 and column 24, lines 10-22 and Fig. 6 and column 16, lines 3-15 of Blumenau to support the assertion that “[t]o perform an operation on these virtual storage areas require specifying the blocks on the virtual disk. . . Thus, Blumenau's discloses an operation of being able to search by specifying a volume on the virtual disk. This functionality reads on the limitations as claimed”

Applicant disagrees. The cited text reads as follows:

The method of virtual ports overcomes these disadvantages in a way that is compatible with the Fibre Channel specifications. In accordance with the method of virtual ports, the storage subsystem presents to the Fibre Channel network a set of "virtual" Fibre Channel ports that do not really exist



on the network. A set of logical volumes is assigned to each of the virtual ports. The logical volumes within each set are accessible from the virtual port through at least one physical port of the storage subsystem. This physical port is therefore a fabric port and the storage subsystem provides a virtual switch from the physical port to each of the virtual ports accessible through the physical port.

Since the list is changed infrequently, the list entries can be sorted for a binary search procedure. Moreover, it is possible to reduce the number of entries in the volume list and speed up the search process by specifying a range or vector of volume numbers in each list entry. Shown in FIG. 6, for example, is a volume list entry 83 specifying a beginning volume number 84, an ending volume number 85, and a value 86 of one minus a stride (S). For example, the beginning volume number 84 is coded in three bytes, the ending volume number is coded as three bytes, and the stride is coded as two bytes. The stride (S) indicates the difference between neighboring volume numbers of the volumes in a disk spread. The stride (S), for example, is a positive integer ranging from 1 to 256 decimal.

Contrary to the assertion in the final Action, nothing in this text discloses or suggests *specifying a block on the virtual disk within the operation*, as recited in claim 24.

The Examiner's Answer appears to assert that this limitation is inherent in Blumenau.

To the extent that the Examiner's comments indicate that the Examiner considers this limitation of claim 24 taught by inherency, Applicants assert that the record fails to provide any factual support for a finding of teaching by inherency. To prove inherency, the Examiner must establish that the system disclosed in Blumenau *necessarily* includes the limitation recited in claim 24. Continental Can Co. U.S.A. v. Monsanto Co., 948 F.2d 1264, 1268 (Fed. Cir. 1991). There is no showing on the record that performing an operation on a virtual storage area in the system of Blumenau *necessarily requires* specifying a block on the virtual storage area within the operation.

Moreover, the assertions in the Examiner's Answer fail to address specific structural limitations recited in the claim. Claim 24 recites *specifying a block on the virtual disk within the operation*. There is no evidence whatsoever on the record that Blumenau, alone or in

combination with Casorso, disclose or suggest *specifying a block on the virtual disk within the operation*. Thus, Blumenau, alone or in combination with Casorso, cannot render obvious claim 24.

F. Claim 34

The final Action rejected independent claim 34 “for similar reasons as claims 24 and 31.” The Examiner’s Answer appears to maintain the rejection. Applicant traverses these rejections, and asserts the arguments asserted above with respect to claim 24.

### CONCLUSIONS

Blumenau, alone or in combination with Carsuso fails to disclose or suggest limitations of appellants' claims. Therefore, Blumenau cannot be used to establish the required *prima-facie* case of obviousness under 35 U.S.C. §103. Appellants urge the Board to reverse the examiner's rejections under 35 U.S.C. §103 of claims 1-30, 34, and 36-40.

Respectfully submitted,

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A handwritten signature in black ink, appearing to read 'Jed W. Caven', with a stylized, cursive script.

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Date: April 19, 2006